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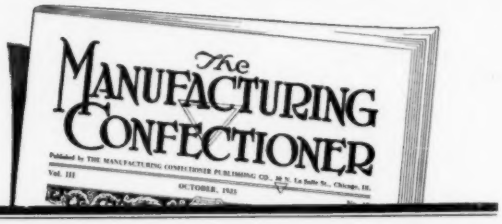
EDITORIAL



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Subscription Price, $3.00 the year. Single Issues, 50 cents.

A Specialized Technical and Commercial Magazine for Confectionery Superintendents, Purchasing Agents and Executives

Published Monthly on the 15th by

***The* MANUFACTURING CONFECTIONER PUBLISHING CO.**

30 North La Salle St., Stock Exchange Bldg.

CHICAGO

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Policy

THE MANUFACTURING CONFECTIONER is a specialized publication for manufacturing confectioners exclusively, edited in the interest of the executives in charge of the purchasing, production and sales departments; a medium for the free and frank discussion of manufacturing policies, problems, methods and materials.

The same corresponding policy applies to the advertising pages which are available only to the supply manufacturers for the advertising of products which are used by the manufacturing confectioner—machinery equipment, raw materials and supplies, etc.

Aims

The Manufacturing Confectioner believes in

Sanitary and Hygienic Standards established for the manufacture and handling of confectionery.

Organization of jobbers and manufacturers in every local zone in the United States with representation in a national body which will be a federation of all local confectionery associations.

Uniform Method of cost finding and accounting.

Pure Food Legislation which enforces a quality standard for confectionery.

1926

So this is 1926!

It looks good—another year of opportunity—with the business barometer indicating a clear track ahead for a safe and sane program of legitimate industrial expansion. That means industrial health; thank the powers that be there are no boom clouds on the horizon.

One does not have to put on long distance glasses to see that the confectionery industry is headed right and is making substantial progress every day in spite of the many industry evils and errors which face us at this time. For instance, note the progress in candy craftsmanship today compared to ten years ago; better machinery, better control of processes, more knowledge of the science of candy manufacture and more of an appreciation of the engineering fitness of things in factory layouts and installations. It has been a revelation to some candy manufacturers to find out after modernizing their equipment and all production facilities that they can *save* more profits on their goods before they get out of the shipping room than they formerly hoped to *make* on a sales campaign.

Candy selling is surely getting on a higher plane. There is evident, on the whole, a much better spirit of constructive co-operation with sincere determination to better conditions within the confectionery industry. The "show down" on the depth of these manifestations will show up in form of how deep the candy manufacturers of the country are going to dig down in their pocketbooks to support a three-year intensive co-operative campaign to extend and stabilize the markets for confectionery.

"I Am the New, New Year!"

A miracle touched me at twelve, for behold, I saw
The New Year rise, as a young god rises in might.
No child was he with hesitant, timid feet,
But a grown joy, wrapped in the raiment of pure delight.

And his eyes, most gracious and tender, were bent on mine;
In his hands he caught my hands, while clarion clear
His golden, rapturous, confident tones rang forth:
"Comrade, hail! for I am the New, New Year.

"Comrade, hail! The pulse of the world's astir
Under the snow, and the ancient doubts are dead.
Freedom, achievement, wait for us. Come, be glad!"
I listened, I looked, and faith to my hope was wed.

His kingly courage told me the beautiful truth;
He is mine, and his strength infuses my rescued will.
Up, faint heart! We will conquer together, my Year;
Life and love shall their old, sweet promise fulfill.

—Clinton Dangerfield, in *The Century*

Successful Candy Superintendents I Have Known—and Why

by A Close Observer

IT IS easier to state why men fail as superintendents than it is to give definite reasons for their success. Men fail usually because of one or two outstanding faults, while the successful superintendent as a rule is a "good all-around" man with many strong qualities and few glaring faults. Perhaps this may be the answer.

To be really successful, a candy superintendent should know many things and be able to handle any kind of situation that arises. He must do this not once but day in and day out. Hence, "all-round" development is more important than special ability. To be sure, certain qualities are essential, but these alone will not suffice. The best candy-maker in the world would not be successful as a superintendent unless he also knew how to handle help and get his work out on time. One might mention several other characteristics which, if lacking, would seriously handicap a superintendent.

Perhaps the best way to illustrate the reasons why some men accomplish more than others is to cite a few examples from actual life.

One of the most successful superintendents in the industry is a man that on casual acquaintance might not impress you with the extent of his ability. He is first, last, and all the time, modest and unassuming, practical, thoroughly commonsense, with his feet on the ground.

A "Close-Up" of a Successful Superintendent

You would never take him to be a dreamer of dreams, yet he has to his credit some remarkable improvements and developments. He has the courage, enterprise, and initiative of a pioneer. To him a mystery or problem is a thing to be solved. While he is full of original ideas, he has the practical ability to put them into effect and many times has accomplished what other people in the industry consider impossible. Open-minded, free from prejudices, he has the capacity of securing new ideas from other lines of business and adopting them for use in his own plant. I have known him to attend a meeting and hear a speaker from another industry tell how they were handling certain problems. The speaker's talk would start a train of new ideas in this superintendent's mind. By the time he had reached the plant the next morning he would have evolved a practical method of putting the suggestion into effect in his own factory. He is continually seeking for new ideas and better methods.

With all his enthusiasm and keenness for improvements and new methods, he is seldom carried away and almost never makes an innovation or installs a new method without careful trial and experiment. It is not unusual for him to carry on experiments for months before he gets just the results desired and is ready to put them in execution. Possessed of infinite patience in working out details, he himself spends many hours, sometimes far into the night, making trials and tests, although much of his experimental and research work is done by his assistants. He has had the courage and patience to keep at a thing until he is sure it is right. One of the reasons why he has accomplished so much is that he is more interested in his job than in anything else. In fact, I believe he is never more happy than when working out some new method.

To this must be added certain other characteristics. First, he has a keen appreciation of what really high quality workmanship is and, without being fussy, will not put up with anything less. He has sufficient capacity and force of character to hold his entire organization up to the standard he wishes maintained. Unyielding in his insistence on uniform quality and excellence of workmanship, the product of his factory is a recognized standard for competition.

Another striking characteristic is the ease with which he controls his organization. Apparently without effort on his part, those working with him just naturally fall in line and keep in step with his wishes and desires. Of course, there are exceptions, and then he does not hesitate to speak out frankly if there is need. Neither does he hesitate to eliminate promptly from the organization any who fail to keep up to the standard or show unwillingness to cooperate, or have any tendencies to slack either in the quantity or quality of their work. When you see him around his plant, which is a rather large one, you think of him more as a fellow-worker among his employees, a man to whom they defer, not because of his position, but because of their respect for his ability and knowledge. Yet there is never familiarity nor any question as to who is in charge.

One reason for his strong hold upon his as-

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sociates and workers is his very human sympathy and understanding. He has not only the confidence and respect of employees but they also have an exceedingly friendly feeling for him. They know that they can go to him with their personal problems, that he will understand. He has proved absolutely loyal to those who are working with him and will go the limit to help those in difficulty. He also takes pride in developing his associates and giving them an opportunity to do better things. Yes, the factory is successful.—You and I could retire on one year's profit.

You Can't Keep This Man Down

Another superintendent rapidly climbing the ladder in the candy industry is a comparatively young man who began some years ago preparing himself for a position of responsibility in this kind of work. While he worked as a candy-maker for several years, he educated himself by attending night schools and by other forms of study. Furthermore, he has worked in several different plants, selecting these not because he could get a job there but because he felt he could learn something better in them than in any other place. Thus, he is familiar with nearly all candy-making processes and the methods used by various leading firms in securing certain results. While working he also made a study of their operating and control systems, so that he understands candy plant management as well as candy-making. Nor has he confined his studies merely to the factory end. He believes that in order to handle the superintendent's job effectively a man should understand business fundamentals, have a knowledge of accounting, cost keeping, appreciate the essentials of successful selling and merchandising as well as the problems and practices of other lines of business. He is an exceedingly practical, hard-hitting man, full of determination and energy, and is a keen analyst of problems.

It is a rare treat to see him analyzing a piece of candy or an assortment of chocolates put out by a competitor. He can go through either a one-two, or five-pound assortment in a comparatively short time and draw up a tabulated statement of just what it contains, the relative weights of the various pieces, the approximate cost, with an analysis to show just why the competitor is able to sell the particular combination at the price that he does. More frequently, however, he finds that the competitor is really losing money and does not realize it. From this analysis he is able to give the sales department selling arguments to prove that the competitor's combination has no more real value than the one which the company is putting out. On the other hand he may find it desirable to make changes in his own packages to meet the competition. It does not take him long to act when once he finds it is necessary for him to make changes. He has the knack of going up into the factory and, after a few words of explanation, getting changes made almost immediately, so that from that time on he will get the results wanted. He has an active and vigorous mind, deals promptly and effectively with any problems that come up, making clean-cut decisions without delay. He is exceedingly effective in his control of his plant, knows his costs, and in every way gives the impression of a man who is going further.

HERE is an illustration from another industry that may prove of value to younger men who have ambitions to climb higher in the confectionery business. This is the story of a man about thirty-five years of age, who is now the factory manager of a plant employing some four thousand people. When he finished his schooling, he went to a business acquaintance for advice as to the best means of getting ahead in the line that he had chosen. The answer was rather unique. The friend's advice was this: "Select some promising, growing plant in the industry but not one that is too large; go and see the superintendent or general manager and ask him for the most difficult job he has in the plant. Don't accept the position unless it is one in which you will be confronted with difficult problems. When you find such a job, stay with it until you have made good. Then when you have established a definite record of achievement on that job, go to another plant in a similar line asking again for the most difficult task, and follow the same procedure with this job. Do this about three or four times, being sure that you do not leave a job until you can leave behind you a record of definite accomplishment and success. By that time you will find some of the leaders in the industry looking for you." The young man realized the value of his friend's advice and followed it out to the letter. He refused offers of permanent jobs until he had made a record for himself in at least three different plants.

This sounds almost like a fairy story, but I know the firm, the man personally, and have heard the story from the head of the organization who now employs this man as his factory manager.

About ten years ago this firm, whose name you would recognize immediately as one of the "king pins" in its line, needed a man to take charge of one division of its plant. In casting about they heard of this young man's achievement and traveled from a large Eastern city to a point west of Chicago to get acquainted with him. They made him such an attractive offer that the firm he was with at that time regret-

(*Continued on page* 45.)

Control of Insect Infection in Nut Meats

and all other raw materials in confectionery

by Norman W. Kempf

The Utopia in candy manufacturing conditions will be much nearer realized when raw materials can be worked up into finished goods which are incapable of developing insect life after they have been sold to the retailer. The problem then is to sterilize incoming raw material and prevent its reinfection. Mr. Kempf has made an exhaustive study of this problem in general and specifically to determine what practical means were available for complete sterilization of nut meats without injury to either flavor, appearance or quality. We are much indebted to Mr. Kempf for a report on this work which is a valuable contribution to the scientific literature of the candy industry. This report will be concluded in our February issue.—Editor.

Laboratory at the Long Island plant of Happiness Stores, Inc., showing incubator and balance tables and Mr. Kempf "in action" checking up on samples of incoming raw material.

WITH the growth of our industry, and the introduction of quantity production and long-range distribution, the control of insect infection, the ancient problem of the confectioner, has become more acute. Wormy candy is still a thing of the present and troubles us in spite of the introduction of modern methods of manufacture. For many years hope of solution of this problem has been faint, because of almost universal ignorance as to the real cause of the trouble. It is the purpose of this article to describe the sources and nature of the infection, and consider possible remedies at the disposal of the manufacturing confectioner.

There are three varieties of insect pests which attack the candymaker's raw materials and finished products, the moths, weevils, and flies. Of these, the moth is the worst offender. This destructive insect, commonly associated with the holes in our winter overcoats, has developed a parasitic family which preys on nutmeats, cereals, and similar foods. The American member of this large family is known to entomologists as Plodia Interpunctella.

The Habits of a Moth in a Candy Factory

The adult of this species is a gray-brown moth, about ⅜ inch long (slightly larger than the moth whose habitat is in the family woolens) the male having dark brown coloring on the tips of the wings.

This moth, frequently seen in nut-shelling plants and candy factories, lays its eggs in or near shelled nuts, cereals and many other food products. There is also abundant evidence to prove that it sometimes lays its eggs in the blossoms of the nut tree, so that the nut will grow around the egg, which is then particularly well placed for the nourishment of the young. These eggs, after passing through an indeterminate incubation period, hatch a collection of larvae or caterpillars, whose chief object in life is to eat. These larvae are the "worms" of the candy industry.

As they move about, selecting the choicest nuts for their next meal, they leave a trail of silk web, cluttered with their excretions, a certain evidence of their presence. Having eaten their fill, they repair to a quiet secluded corner or crack, and spin about themselves a cocoon, using more of the silk thread. Thus protected, they undergo a metamorphosis or change to the pupa stage of their existence. The skin hardens to a shell and inside of this additional protective coating new organs are developed, wings, legs, antennae, and reproductive organs, again forming a moth. When the process is complete the new insect emerges from the now useless shell, and flies forth in search of a mate. Courtship is short and the female moth is soon ready to

Another view of Mr. Kempf's department showing in the left foreground the Schonbein test for bitters in almonds. At the right, the Roese Gottlieb test for butter fat in milk products, and in background, extraction apparatus for cocoa butter in chocolate. In addition to analytical work in connection with the laboratory control of all purchases of raw materials, Mr. Kempf also is in charge of quality inspection of goods in process, keeping check on the condition of materials in stores and in work and also the standardization of the batches.

deposit her burden of millions of fertilized eggs, in your choicest nutmeats or candy.

The Problem to Produce Sterile Candy

Having determined the cause of the trouble, control of the infection becomes possible, although sometimes difficult, in view of its widespread nature. Most nutmeats arriving in candy factories contain these moth-eggs, which means that the majority of candy factories are kept constantly infested. The problem resolves itself into two phases, the sterilization of incoming nutmeats, and the prevention of reinfection of the sterilized nutmeats during their stay in the factory. If we successfully accomplish these two things, we will have produced a sterile candy, incapable of developing insect life after it has been sold to the retailer.

The sterilization of incoming shipments, presents the greater difficulties especially since the nuts themselves are highly sensitive and perishable foodstuffs, requiring more than ordinary care in handling to prevent deterioration in flavor and keeping quality. Hence we cannot dip them in an antiseptic solution and let it go at that. Four years ago, the writer undertook a serious study of this problem to determine what practical means were available to the confectioner for the complete sterilization of nutmeats without injury to either their flavor, their appearance or their keeping quality. Investigations were made along the following lines:

1. Treatment with a poisonous gas.
2. Treatment with an inert gas which does not support life (Carbon Dioxide, Nitrogen, etc.)
3. Subjection to abnormal pressure conditions (Vacuum and high pressures).
4. Sterilization by means of electric rays.
5. Sterilization by heat or cold.

1—Poisonous Gas Treatment

In considering gas treatment, we are at once confronted with the sensitive nature of nutmeats. All nuts contain relatively large percentages of oils, and the remarkable susceptibility of oily substances to foreign odors is well known. This property is made use of by the perfumers of France, who fix the fugitive odors of flowers by embalming them in fat. The essential oil is subsequently recovered from the fat by distillation. This interesting property of fats, so useful to perfumers, explains the failure of most poisonous gas treatments. A large number of these gases have been tried, but in practically every instance the nuts tenaciously retain the flavor of the gas to which they have been exposed.

Perhaps the only exception to this rule, is the gas Hydrocyanic Acid. Exposure to a concentration of this gas sufficient to kill eggs, larvae and moths does not cause sufficient absorption of odor to render the nuts unfit for use, nor does

it cause any perceptible change in flavor. Because of its intensely poisonous nature, however, the employment of this gas is legally restricted, not to say dangerous. It can only be safely handled by trained men, familiar with its characteristics, apart from other factory operations. Also its high price adds very much to the cost of treatment.

2—Use of an Inert Gas

The principle behind this method is excellent; the theory being that the gas will not affect the nuts because of its inertness, but will kill all insect life by removing the oxygen which is necessary for its existence.

A series of tests made on various stages of insect life revealed the fact that adult moths, weevils, etc., were suffocated by a short exposure to the gas. The larvae, however, exhibited remarkable resistance. Exposed for forty-eight hours to an atmosphere of pure carbon dioxide, they remained dormant, and were apparently dead. On the admission of fresh air, however, they were restored to activity and proceeded to finish the destruction of the nut they had been devouring when the carbon dioxide was applied. Tests on eggs showed that they were unaffected by the gas, except that they would not hatch while exposed to it.

3—Subjection to Abnormal Pressure Conditions

Tests made along this line included exposure to both vacuum and high air pressures. These extremes of pressure were effective in killing both larvae and adult insects, but failed to sterilize their eggs.

4—Electrical Sterilization

Encouraging results were obtained in preliminary experiments to sterilize nutmeats by exposure to ultra-violet rays, but unfortunately, the cost of electric treatment is at present prohibitive. Apparatus large enough to handle the quantity of nutmeats used by the average confectioner would cost an enormous sum, and the current consumption would also be great. There is hope that future research will develop a practical and cheap process for electric sterilization, but this does not solve our problem for the present.

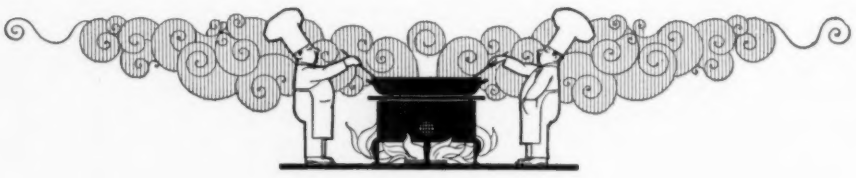
5—The Use of Heat and Cold

The best known methods of storing nutmeats require the use of low temperatures to arrest the development of insect life. Ordinary cold storage warehouses maintain a temperature of 32 degrees Fahrenheit, although special rooms are sometimes available at lower temperatures (so called "Meat Storage"). At these temperatures larvae and adults are killed, and there is no danger that the eggs will hatch, but unfortunately, the eggs are not sterilized, and are still virile when the nuts are brought out again into ordinary temperatures. Consequently no amount of freezing will solve the problem, although it is a great help in storing nuts before use.

Because the flavor of nutmeats is altered by heat, there is a limited temperature above which we cannot go without roasting the meat. Therefore the use of high temperatures is out of the question except in cases where the nut is to be roasted anyway. Roasting of almonds, peanuts, etc., provides an excellent and simple means of killing all animal life present in whatever stage it may be. However, with pecans and walnuts another method must be found.

Much work has been done on sterilizing at intermediate temperatures and at least two successful processes are now in use. This field offers the greatest hope of immediate success, although there is still much work to be done in determining the correct conditions because of the sensitive nature of the nutmeats.

A following article will take up methods of eliminating moths from the candy factory to prevent the spread of infection during the manufacture of candy.



"Greater Returns from Human Capital"

—in four parts—

Every Pivot Man the Head of a Business

The keynote of this series of articles is "Bigger Returns from Human Capital"; they will show how a better understanding of the common purpose of workers and management, and more effective efforts up and down through the organization to attain it, will increase profits—through the reduction of waste, mistakes, labor turnover, overhead, expense, etc.

written exclusively for The Manufacturing Confectioner

By Seth Seiders

President, Seth Seiders, Inc.

THREE years ago there was organized in a middle-western city a corporation to manufacture a new staple, for which a good demand had been demonstrated. The company had ample capital, a modern plant, plentiful labor supply, and was located in the center of its market. Raw materials were available in quantity within a radius of 100 miles. Every factor pointed to the probability of an outstanding success.

Yet within eighteen months after operations began the corporation went into receivership!

The representatives of the stockholders told the court that, while they had as much faith as ever in the possibilities of the business, something was radically wrong. They wanted the property conserved.

The company, they said, had no difficulty in obtaining customers—but lost them almost as rapidly as it got them—and for this there seemed to be no end of reasons. Either deliveries were not made on schedule, or, when made, were discovered to be of quantities different from those ordered; either the quality of the product was uneven, or it was just enough "off" in color or some other detail to hinder sales; either invoices were not properly made out, or the terms were not as promised by the salesmen. If it was not one thing, it was another. Everyone seemed to be at loggerheads, and production costs were steadily mounting. The business was operating at a loss. The stockholders asked the court to determine what the trouble was, and protect their interests.

A local bank, upon being named receiver, hired a new manager in the person of an executive who had won a name for himself by pulling two or three other distressed concerns "off the rocks."

The first morning he was on the job the new manager began to discover things, and within three days he had got to the bottom of the difficulty. It took him six months to get matters on an even keel—but before he had accomplished that, the firm's Pivot Men (department heads, foremen and others in charge of groups of workers) had a very much changed conception of their jobs.

One of the first problems to claim the manager's attention was an indignant customer's cancellation of a sizeable order because of continued delay in shipment. Investigation revealed that the completion of the goods had been held up by the failure of one department to deliver certain partially finished materials to another department. Called upon to explain, the Pivot Man in charge of the defaulting department declared with some heat that he did not intend to speed up his department just to please the head of the other department, who, he suspected, had been talking about him behind his back!

The manager devoted the next hour to getting the two men together for an airing of their grievances—which proved to be largely imaginary—and to showing the unruly one that, while he probably had derived some personal satisfaction by disappointing his fellow department head, he had cost the firm a $4,000 order.

"Suppose this thing happens only five times in a year," said the manager, "the firm loses $20,000 worth of business. It is exactly this

The Tools of Business

"Money, machinery, materials, methods and men—these are the 'tools' of business. The success of the individual enterprise depends, in the last analysis, upon how well the men are able to make use of the 'tools'—how effective the methods they employ—how well they work together to a common end."

kind of thing that has contributed to the firm's financial difficulties and put you and everybody else on the payroll in imminent danger of losing your jobs! And besides, what influences do you think an attitude like this on your part has on your chances of getting ahead in the organization?

"Our business can succeed only as all departments work together—and you contribute to your own success when you cooperate with the other group leaders—because your welfare and progress depend upon the firm's prosperity."

The Pivot Man got the point, and promised that thereafter he would "mesh gears" with the other departments.

Why Production Costs Were Excessive

Examining the cost sheets that afternoon, the manager noticed that expenses of production in one department were a goodly percentage higher than in another engaged in the same operations. So he went down personally to investigate. He discovered much.

He discovered, for one thing, nearly $500 worth of odds and ends—partially used materials, unfinished work, and the like—tucked away under benches, in corners and in closets. Again, he discovered that workers were in the habit of sending work tools to the scrap pile and requisitioning new ones, because, "Oh, well, they're hardly worth sharpening." Digging into a bin of discards, the manager recovered some $200 worth of equipment of this kind—an accumulation of only a month's time.

He heard a foreman say to a helper, "Go get a new belt for this machine—and while you're at it, better bring along an extra one, just to have it handy." The extra belt was laid on the floor, where it would gather moisture and dirt, and eventually be only partly usable.

In a store room of the department the manager found that heavy goods had been piled on lighter materials in fragile containers. The weight had crushed the latter, together with their contents. Two hundred dollars more added to costs!

The executive watched a trucker pushing some finished goods into an adjoining room. As the truck turned a corner, it bumped the door casing, knocking the end out of a crate and damaging the contents.

"No wonder this department's costs are up!" exclaimed the manager, as he went back to his office with his memo pad to make some calculations.

Returning fifteen minutes before quitting time at noon, he was surprised to see that nearly all the 40 workers in the department "knocked off" five to ten minutes before the gong, to wash up.

Calling the Pivot Man into his office after noon, the manager said, "Greeley, costs in your department have been quite a little higher than in the other production divisions—and what I saw this morning tells me why." He then went on to show the Pivot Man the various wastes he had observed—the odds and ends lying about, the discarded tools, the extra belt, the damaged goods in the store room and on the truck, and the knocking off at noon.

"A rough calculation shows that these items represent an actual money outlay of more than $1,200 to the firm," he pointed out. "That represents a year's interest on $20,000 at 6 per cent. In other words, these wastes have reduced the company's borrowing power by $20,000!

"Now, each of these leaks may be small enough of itself—but the point is that when you multiply them by the number of workers who permit them, and again by the number of days in the year, they pile up to a big total. They put a handicap upon the firm which no concern can afford to carry — and thus they work against your welfare.

"Watch the little things! Show your workers how they can help keep down expenses, and so enable us all to progress! A little leak, when not repaired at once, can sink a ship. Our business is to keep this ship afloat—if it goes down, we go down with it!"

The manager discovered many other things during the next two weeks. For example, in a department which was consistently low in production, he found that the Pivot Man was habitually tinkering with this and that repairing machinery, putting handles in hammers, and doing other odd jobs—while making little or no attempt to fit workers into the jobs for which they were best fitted. Within a month after the Pivot Man began studying his men and the work they were doing, production increased from 209 to 280 units.

Another department had been having no end of trouble with the inspection division over goods rejected. The manager found the workers "in the dark" as to what the standards really were. A meeting was held, the standards explained, and a blackboard put up, on which each unit was graded—for all to see. In two weeks all com-

What Do You Mean "Pivot Man"?

Our readers are introduced in these articles, to a new term, "Pivot Man," which identifies the department head, superintendent, foreman or group director who has obtained the larger conception of his job—that of a teacher and leader rather than a mere "boss" who enforces discipline by virtue of his authority. This type of executive gets greater results, at less cost, by inspiring and leading his workers—by guiding their thought and action along right lines.

plaints about quality had ceased—and, in addition, production had increased!

And so he continued his work, in one department after another, correcting a wasteful or unproductive practice here, lopping off a needless expense there, and giving a Pivot Man in another quarter a new "slant" on managing and leading his workers so as to obtain closer cooperation, greater results or reduced costs. At the end of the first month he had effected revisions in ideas and methods which would save the concern thousands of dollars during the first year.

The First Meeting of the Foremen or "Pivot Men"

Then he called a meeting of the Pivot Men.

"Boys," he said, "we have done a lot of constructive work this month, and I want to thank you for the way you have backed me up. It will do you good to know that the improvements we have started will save the firm something like $50,000 during the ensuing year. Do you know what that means? It means that all of us working here together are not only going to put this concern on its feet but make it one of the most prosperous in the industry—able to do more for you in the way of direct rewards then most any other firm with which you might like to be hooked up. In other words, by putting your shoulders to the wheel here, you are putting your shoulders to the wheel of your own prosperity.

"Now, let us again review our big problem, so that we may keep it fresh in our minds.

"Our big problem—and it is the big problem with any business enterprise—is not so much one of our individual skill in our technical operations, as it is one of leading, teaching, inspiring and winning the confidence of our workers, so that they will want to join with us in every way possible to make this business pay—so that it, in turn, can assure them of continuous employment at good wages. To put it in one sentence, our big job is the leadership and management of the human element.

"When we have this bigger view of our jobs, results begin to be seen. Costs come down, production increases, quality rises, friction disappears, complaints fall off, labor turnover and overhead decrease—and each of us derives a splendid satisfaction from knowing that he is the capable head of a business—a business-within-the-business—which is ours to manage, and which we lead and manage in such a way that it of itself not only yields the firm a good profit, but cooperates with the other departments for the advancement of the business as a whole.

"Keep that thought in mind—that each of you is the head of a business—each of you is an executive—and that all of us are going to continue to study our workers so as to become experts in leading and managing them. Then we shall succeed in the largest way."

In urging his Pivot Men to think of themselves as heads of firms-within-the-firm, and train themselves to function more capably as such, this manager hit upon an apt way of expressing the policy which thousands of the most successful executives throughout the country have been following, the last few years, with remarkably productive results. The success of that policy lies in the fact that it puts emphasis upon the necessity of the Pivot Man's being well-rounded—by which we mean skilled not only in the technique of his job, but in understanding human nature and applying that understanding in the management of his workers. For the human factor absolutely limits and controls all the other factors in business.

One of the most prolific sources of waste in industry is the fact that, in far too many cases, Pivot Men are selected because of their ability as workmen—and without much regard for their qualities of leadership.

The Tools of Business

Money, machinery, materials, methods and men—these are the "tools" of business. The success of the individual enterprise depends, in the last analysis, upon how well the men are able to make use of the "tools"—how effective the methods they employe, and how well they work together to a common end.

Now, so far as money, machinery and materials are concerned, a firm may well feel certain of its Pivot Men's qualifications. It supplies them with money in the form of payroll and the materials and equipment with which they work. Of their mastery of machinery and methods, it was satisfied before it promoted them to pivotal positions. The choice narrowed down to two or three of the most proficient, who had shown complete knowledge of processes, had demonstrated good judgment of quality, and who understood the inter-relationship of the departments of the business.

But of their ability to lead and manage workers, a firm cannot be sure. Very often the most skilled workmen fails in a position where he is called upon to direct the activities of others. He may not be able to command the confidence and respect of his workers—that first great essential to an effective department. There may be waste of time, money or materials; friction and dissatisfaction; lack of teamwork; high labor turnover or excessive overhead.

Certain qualifications are lacking—certain training has been denied the Pivot Man! And it is no exaggeration to say that the lack of these qualifications causes more waste in business today than all other sources combined!

The confectionery manufacturing business is

(*Continued on page* 36)

The Care of Machinery and Equipment in a Confectionery Plant

by W. E. Brown, M. D.
Industrial Health Conservancy Laboratories

Every machine represents so much earning power. A dirty machine means ultimate breakdown and stoppage. That spells loss of money. Clean machines indicate clean Workmanship and hence a clean product. Dirty machines indicate slovenly workmanship and by the same token an inferior product.

The sanitary and hygienic status of a plant can be determined by the number of new parts needed. Proper sanitary and hygienic organization means clean machines. Clean machines mean minimum repairs.

The same man who insists on having a well oiled and spotlessly clean automobile in which to go to and from his factory will often allow his employes to neglect his factory machinery, which make possible that same automobile.

Part 1. The Machine Manufacturer's Ideas.

A POOR workman blames his tools. A good workman takes care of his tools. The former attributes his poor work to poor tools, while the latter increases his efficiency and skill by maintaining the efficiency of his implements. These may be said to be universal rules applying in all industries. They have very particular application in the confectionery industry.

Safeguard the "Health of Your Machinery"

Machinery in the manufacture of candy has become more and more intricate as years of experience have added to the types of machines supplementing and supplanting hand work. More and more has the trend been to get away from the contact of human hand and finished product. This development has been commendable but with it has developed a need for proper care of machinery so that the substitution of the machine for the human hand might not act as an "unsanitary pitfall." As it is necessary to take precautions to preserve the health and working capacity of the worker who uses his hands, so great care must also be taken of the machine in order to insure efficient production and a satisfactory finished product. Neglect the "health of the machine" and immediately you discount the sanitary and economic values of machinery.

As one studies candy plants one is constantly impressed with the great differences of opinion prevalent amongst manufacturers as to the essentials in caring for machinery. One group strenuously objects to certain methods of cleaning machines while other groups reckon the same procedure as desirable in the daily routine. One is sometimes at a loss to know just what standards should be maintained in the care of machinery and what methods used in maintaining the standards.

Authoritative sources were sought as giving the best information regarding correct methods of cleaning and caring for machines. Reference was had to the manufacturer of machinery as the man who made the machine. Reference was also had to the candy manufacturer as the man who actually uses the machine and who is thus in the best position to tell of the results obtained from the machine. This article will deal only with the information derived from the machine manufacturer. A second article will deal with the ideas given by the candy manufacturer. In the second article a complete summary will be given of the facts given by both.

The following questionnaire was sent to manufacturers of candy machinery and equipment. The questions were made specific and deal primarily with those things having to do with the life of the machine, increasing production of the machine and the delivering of a sanitary product by the machine. The questionnaire sent to the candy manufacturers included much the same type of question but was so modified as to give the machine user a chance to express his opinion first hand as regards actual factory practice. This questionnaire will be given in Part 2 of the article along with the discussion of the methods recommended by users of machinery.

Copy of Questionnaire Sent to Machine Manufacturers

QUESTIONNAIRE

In taking up the following questions, it is taken for granted that proper installation has been made, that proper oiling is carried out, and that the various mechanical features have been duly cared for. It is of interest to know whether or not general cleanliness is an additional factor of importance.

A. What types of machine do you manufacture?

B. Are detailed instructions for cleaning sent with machines to be installed?
(Note—Please send us copy.)
If not do you usually recommend periodic cleaning?

C. How frequently do you think your type of machine should be cleaned?

D. Is it necessary to knock down machine for thorough cleaning?

E. Do you recommend any particular cleaning materials?
Does soap or soap powder with water damage any parts of the machine which come in contact with the candy?

F. Does live steam harm the machine?

G. May too frequent cleaning injure the machine? What is your opinion of daily cleaning of the machine where it comes in contact with candy?

H. Do you think that the life of the machine is effected by regard for cleanliness?

I. Do you think that the production of a particular machine may be influenced by cleanliness?

Answers to question "A" indicated that all types of candy machinery were covered in the canvass of manufacturers. One manufacturer stated that he manufactured nearly every type of candy machine and that what he said about the importance of cleanliness applied equally to all types. The answers to question "B" were of particular interest. No manufacturer stated that he sent detailed instructions for cleaning his particular machine. Several stated that explicit instructions for setting up the machine and oiling it were sent with each machine but so far as they knew the instructions were never followed. Periodic cleaning was in no case recommended.

One manufacturer of machines stated that instructions were given by word of mouth that the machine should be kept clean "all the time." Another said that a general instruction was given "never to allow the machine to become dirty." The manufacturer of machinery should be interested in seeing the proper use made of his machine in order to see a proper return on the money invested by the candy manufacturer. The machine manufacturer often realizes that poor results are obtained only because poor care has been given to the machine.

Sanitary Ratings for Candy Plants

One machine manufacturer made the statement that he could sit in his office and tell which candy plants were run in a clean, sanitary manner. When asked what was the basis for such long-distance judgment he replied that where plants were thus properly run the machinery was given the correct sanitary care, that where that care was given fewer break-downs occurred and hence fewer repairs and new parts were needed. Thus he could refer to his orders for extra parts and give a sanitary rating to each particular plant. This fact is quite compelling as viewed by machine maker and machine user. If the former can so readily see the importance of cleanliness in the use of his machine it would seem to follow that he should make every effort to place in the machine user's hand details regarding the way in which he should care for the machine. Specific instructions as to times and methods for cleaning machines should be sent out with each type of machinery manufactured. The machine user would in this way not only be guided as to the manner, times and necessity for proper cleaning of the machine but he would be able to assume his responsibility for the care of the machine on an intelligent basis.

Frequently one encounters the statement that it takes too much time to knock down a machine and clean it. The labor factor must be considered in all processes and the economy of labor in cleaning processes is important. Question "D" was asked in order to get an idea of the necessity for this procedure in cleaning machines in the candy industry. The answer to this question was practically unanimous in stating that all modern types of machines are so built that they can be easily cleaned with the removal of few, if any parts. Most of the machine makers stated that there was a decided disadvantage in knocking down machines as they were so often put together again improperly. A few old style machines still require dismantling in order to get at parts but the modern trend in machine manufacture is to make cleaning a simple matter. Here again a word of instruction from the manufacturer to the user of the machine might prove profitable to both parties.

Cleansing Materials and Methods

Cleansing materials to be used on various types of machines have always been the cause for much discussion. The questions asked regarding the use of these materials were so couched as to gain information regarding the care of the machine, the possible harmfulness of materials to the machine and the possibility of adding a disagreeable or harmful odor or taste to the finished product. In all instances except in the case of wrapping machines the manufacturers stated that steam and hot water were the best materials to be used. No one objected to the use of soap and soap powders on the parts of the machine coming in contact with the candy so far as damage to the machine was concerned. All suggested the possibility of contaminating the candy unless care was exercised in completely removing the cleaning materials. In wrapping and package machines it was sug-

gested that clean cloths dampened with hot water be used.

Two manufacturers suggested that live steam was not good for starch machines because of possible dampness. Another stated that live steam might cause rusting of the bearings with resultant sticking of the machine. To overcome this last-mentioned difficulty one manufacturer of machines said that greasing of all bearings should follow the use of live steam on a machine. From the machine manufacturer's point of view, live steam and hot water seem to be the most desirable methods for removing accumulations of material and for destroying contaminating bacteria.

Question "G" had its origin in the fact that machine users often state that it is harmful to clean certain machines more often than once a month. With the exception of manufacturers of air conditioning equipment, who stated that once a month was often enough for cleaning of this particular type of machine, all manufacturers of candy equipment seem to agree that too frequent cleaning is impossible. Most of the answers take into account the cost of labor and that too frequent cleaning adds unnecessarily to the overhead. All stated emphatically that proper cleaning at regular times yields big returns in the longevity and production of machines. Most answers stated that machines should never be allowed to become dirty and that cleaning a machine was part of the process of manufacturing. Others stated that a few minutes should be allowed before closing time so that the operator might clean his machine and leave it in condition for the next day's work.

In regard to the factor of cleanliness and care in the life and production of machines all manufacturers were in agreement. All emphasized the importance of proper oiling and added that dirty machines were proverbially short-lived. One man went so far as to say that the greatest factor making for rapid deterioration of machines was failure to keep them clean. He felt that yearly painting of machine parts helped to prolong the life of the machine and bettered the care it would be given. "Production from machines varies directly in proportion to the cleanliness of the same" is a statement made by one machine manufacturer. Breakdowns are usually attributable to lack of care or lack of cleanliness. Each breakdown means a loss of so many hours of production. Thus lack of cleanliness must inevitably mean a loss of production.

Reviewing the material submitted by the various manufacturers of machines, it seems quite apparent that they deem the cleaning of machines an imperative need. There is, however, very little discussion of specific methods for obtaining cleanliness of machines in an economical and satisfactory manner. This same lack of instruction is found when it comes to the installation of the machine in a particular plant. As already indicated the machine manufacturer owes it to the man, who buys and subsequently uses his machine, to give him adequate information regarding the needs for cleanliness and how they may be cared for. It will be of great interest to note how much of this has been worked out by the candy manufacturer himself and how important he finds the matter of cleanliness in the care of his machines. All of this will be discussed in the next article in which we will give the first-hand valuation of methods and results as described by experienced candy men, who have applied these practices in their factories.

(*Continued in February issue*)

Next Month:

A digest of expressions from successful candy executives and production men on this same subject of the care of confectioners' machinery and equipment.

New Process for Coating Nut Meats and Centers of All Kinds With Chocolate

Julius Franzen, originator of the Wilsonette process.

A new process which accurately controls the amount of chocolate on the center by special method of manipulating the melted coating.

Invented by Julius Franzen

Factory Superintendent, Ernest Wilson Co., Inc.

The Wilsonette process of coating with chocolate is one of the notable contributions to the progress of the confectionery industry in manufacturing methods, especially from the standpoint of taking the hand out of hand-dipped and hand packed candies. The process lends itself to the development of specialties which should win over more new candy consumers and hold 'em.

Mr. Franzen deserves a "distinguished service medal" for his initiative and originality in defying precedent and developing something really new in candy craftsmanship which has a constructive significance to the entire industry.—Editor.

HUNDREDS of candy makers and dealers have seen 'em and wondered about 'em—Wilsonettes—those little, shiny chocolates put out by the Ernest Wilson Candy Company of San Francisco. Wilsonettes have been the sensation of the candy world, since the process by which they are produced provides a way to coat individually small centers in bulk quantities and give them a finish that neither mars nor scratches in handling.

Previous to the discovery of the Wilsonette process of chocolate coating, the price of producing coated nut meats was so high that their consumer market was naturally limited. The only practical way of putting out small nut meats was in clusters. Although it was generally realized that small creams and chews would find a ready market with the public, dipping them by hand was too tedious and expensive to be profitable. Then, too, the ordinary hand dipped chocolates must be handled and packed in a kid-glove manner and small pieces would only complicate this task. The Wilsonette process promises to alter greatly, if not completely revolutionize, the manufacture of all kinds of chocolate coated candies.

What the New Process Accomplishes

Taking a handful of Wilsonettes, which may include the smallest pine nuts or largest Brazil meats, chews and creams no bigger around than a dime, one notices that the coating follows the contour of the nut meat or is perfectly smooth, as the case may be. One can trace the krinkly contours of the raisin or pick out the pecan or walnut centers by their shapes and indentations. If one rubs the candies together they do not mar or scratch and the shiny, glossy finish of each small or large piece still remains. Being familiar with the ups and down of working with chocolate, one ponders, scratches his head and concludes that the how and why of producing Wilsonettes is a secret.

Correct. The process by which Wilsonettes are manufactured is a secret—a deep, dark secret and fully protected by U. S. Government patent rights, recently granted to Ernest Wilson of San Francisco. The Wilson Company holds an unconditional patent to the Wilsonette process and has exclusive control of the right to issue licenses for the use of the process by other candy manufacturers. The Sweet Candy Company of Salt Lake City, Utah, The Peerless Confectionery Company of Chicago and Maillard's of New York already hold such licenses and are manufacturing chocolates by the Wilsonette process.

The method by which the little candies are individually coated and polished is a simple one. It requires no special equipment or machinery. Standard apparatus in common use in any candy factory is the only kind employed. The secret does not lie in a formula—in anything that is added to or taken away from the chocolate. The cream and chew centers used are made up in the same way and of the same ingredients as for the larger hand-dipped pieces. No miracle work is done on the nut meats. The physical structure and chemical nature of chocolate has been closely analyzed and the effects obtained come solely through an accurate and special method of manipulating the melted chocolate. The polishing is done in ordinary revolving drums.

To such perfection has the process been brought that it is possible to regulate the amount of chocolate for any center to the frac-

tion of a hairbreadth measurement and every piece in the batch receives exactly the same amount of coating. As an example of the accuracy possible by this process, the factory superintendent recently coated a lot of bran flakes of the breakfast table variety and every flake came out whole, evenly coated, polished and separate. Still another big advantage of the Wilsonette process lies in the fact that in the manufacture of Wilsonettes labor costs are considerably below those of producing other high grade chocolates.

History of the "Wilsonette Process"

The history of the origin of Wilsonettes is quite as interesting a story as the process itself. Julius Franzen, factory superintendent of the Wilson Company, is the inventor of the method, which he turned over to the company and receives compensation for his discovery on a royalty basis. Franzen is a native of Hungary and received his training in the art of candy making under Emil Gerband, who numbered among his clientele to whom he supplied fine candies the representative royal houses of Europe.

Perceiving the success and wide sale of trademarked bar goods, the Wilson Company believed that the public would accept as readily fine candies in small pieces. The candy bar supplies for five or ten cents all the candy one person wants to satisfy his periodical candy hunger. The ordinary hand dipped chocolate is frequently too rich. More than two or three frequently pall on the appetite. Candy in small pieces with wholesome, simple centers would overcome this difficulty, Wilson's reasoned. For three years, therefore, Franzen worked on the idea of coating small centers individually in bulk quantities and finally evolved the Wilsonettes.

In December, 1923, Wilson's put on the market five cent packages of raisins, mints and butterscotch centers, displayed the small candies on trays in all their stores and made up boxes of assorted Wilsonettes to sell at popular prices. The small package goods achieved a wide sale throughout the West and in various other states of the union. Wilsonettes in bulk and boxes outsold the large chocolates more than five to one. The appetite lure of the little, glossy candies was irresistible. The buyer was also quick to perceive that in a pound of Wilsonettes he received 150 pieces or better. He weighed the 150 Wilsonettes against the 30 pieces that make up an average pound of hand-dipped chocolates and decided that Wilsonettes satisfied the candy appetite and fit the pocketbook—an ideal combination. The public bought Wilsonettes and bought them in increasing quantities. The Wilson Company realized that instead of a specialty, as they had first considered the Wilsonettes, they had developed a staple that would radically change and further develop the potential candy market of the United States.

Accordingly, with the sales merits of Wilsonettes amply proven and in full possession of patent rights, the Wilson Company is in a position to put intensive work into the marketing of Wilsonettes and will conduct a campaign to educate the dealer and consumer to the superiority of the small candies. To the man who sells candy, the goods offer four desirable advantages. First, they can be weighed to the merest fraction of an ounce, eliminating losses through overweight on small bag sales. Secondly, Wilsonettes, in not marring or scratching, are easy and economical to handle. The proper way to handle them for bulk display is to simply pour them into trays. No other chocolates will stand this treatment. Third, labor costs for the production of Wilsonettes being very low, they can be priced low enough to allow the dealer more profit than he ordinarily gets on goods of this kind. Fourth, Wilsonettes sell themselves. The glossy finish of the little candies make an appeal to the buyer that cannot be resisted. Repeat sales are assured because the chocolates fill a universal demand for candy in small pieces and varied center assortments. *—Reprinted by permission from Western Confectioner.*

Made by the Wilsonette Process

Announcing

Plans for Million Dollar Advertising Campaign by the Confectionery Industry

Estimated Cost of the Plan $350,000 Annually for 3 Years

Fisher-Brown Advertising Agency, of St. Louis, selected to handle the campaign with H. R. Wilson as the account executive. Every manufacturer of confectionery in United States invited to contribute a minimum quota of 1/5 of 1 per cent of their annual sales. The details of the official plan will be presented first at the annual convention of the Western Confectioners' Association at Seattle this month and then to the entire industry through a series of zone meetings.

THE following communication has been sent from the National Confectioners' Association to the manufacturing confectioners of the United States:

At the annual convention held in Boston in June, 1925, the following resolution was passed by the members present:

Be It Resolved, That in accordance with Article 10, Section 1 of the By-Laws, the Executive Committee of this Association, be instructed to cause a plan, for Cooperative Advertising by the Industry, to be formulated and after having the approval of the Executive Committee, that same be submitted to the members of this Association and that the Executive Committee be and hereby is authorized to incur the expense necessary to such action providing such expense is reasonable.

And further, that said plan shall include the method of advertising to be done, the total sum necessary to put it into effect and the length of time the advertising will be in effect, and that pledges of individuals toward financing the plan shall not be binding upon them until the total sum necessary to finance the plan shall have been raised.

Under authority of this resolution your officers and executive committee, at a meeting held in Chicago on November 16, 1925, had presented to them advertising plans, prepared by different advertising agencies and gave thorough consideration to these plans and to the question in general.

The executive committee appointed a subcommittee on advertising to select the plan best suited to the needs of the industry as a whole. This committee was to report its decision to the executive committee for approval. The subcommittee composed of Mr. George H. Williamson, chairman, Williamson Candy Co., Chicago, Ill., Mr. W. C. Dickmeyer, Heit-Miller-Lau Co., Fort Wayne, Ind., Mr. A. M. Kelly, Wallace & Company, Brooklyn, N. Y., thereupon prepared and submitted the following report of its decision, which report has been approved by the executive committee.

Agency and Plan

It is the unanimous opinion of the committee that the Fisher-Brown Advertising Agency, St. Louis, Mo., be given our advertising, under the direction of Mr. H. R. Wilson, and that the plan which Mr. Wilson submitted be carried out with such modifications as necessary to meet finances and such changes in copy, etc., as would later be decided upon by the advertising committee.

The committee believes that the plan submitted by Mr. Wilson is the most complete and practical of all plans submitted to the committee and that it will best fit into the needs and conditions of all classes of the industry. Also, that Mr. Wilson, personally, is most adequately equipped to present the plan to our members in a way that will best insure the raising the funds necessary to put it into effect and convey to the members the practicability of the plan.

Zone Meetings

The committee suggests that Mr. Wilson present the sketches, copy and plan at a series of meetings within the next few months, consisting of the convention of the Western Confectioners'

Association in January, the Midland Club in February, and at other points, such as New York, Boston, Philadelphia, St. Louis, Dallas, etc., where meetings shall be arranged for this purpose.

The intention is to present the plan personally, through these meetings, to as many members of the industry as possible.

Pledges

Pledges for the funds to pay for the advertising are to be entirely voluntary. Each member will be asked to contribute in proportion to the position of his company as compared with the position of other companies. If a member cannot determine in this manner what he should or wants to give, the committee suggests that he can reach some conclusion by pledging annually in the neighborhood of 1/5 of 1 per cent of his annual sales.

Pledges to be asked for a period of three years. The results of advertising are accumulative and the greatest results should come in the second and third years and it may take that long for the advertising to become beneficial and productive to the greatest degree. Another reason for the three-year pledge is the fact that the advertising must be prepared long in advance and the committee must know previous to the expiration of each year's plans what to prepare and what plans to make for the following year.

However, it is to be provided that the balance unpaid after the first year shall not be asked for in the event that the advertising does not seem to the executive committee to have produced what could be reasonably expected from the first year's advertising. It is also to be provided that any individual manufacturer may be released from his pledge in the event of his financial inability to pay, upon making a statement of his situation to the treasurer of the association.

The estimated cost of the advertising plan will be $350,000 annually for a period of three years. If every member will contribute a reasonable amount this total sum can be easily reached.

All pledges are to be made contingent upon a sufficient amount being raised which, in the estimation of the executive committee, is sufficient to justify the beginning of a cooperative advertising campaign. Pledges will be payable in full to the treasurer of the association on call by the treasurer, within thirty days from said call, all pledges to be forwarded to V. L. Price, president of the association, who will keep a record of same and report to the executive committee from time to time the total amount of pledges received.

All moneys received from pledges and the payment of all bills to be in charge of the treasurer and no bills covering the advertising shall be paid by him except upon the approval of those to be later designated by the executive committee. And it is further suggested that those who are authorized to approve said payments shall also authorize all advertising contracts and purchases.

Finance Committee

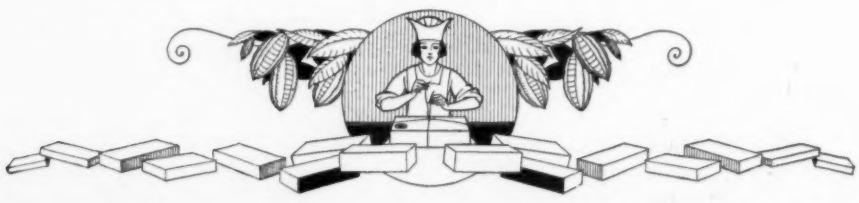
The president to appoint a finance committee covering the various cities and sections of the country. Members of this committee will be asked to be responsible for the securing of pledges in their respective localities. These members will assist and work with Mr. Wilson at the various meetings, held for the purpose of presenting the plan to the members.

Booklet Outlining the Plan

That a booklet outlining the general plan of advertising be prepared for use by the finance committee and for distribution at the zone meetings and to the members.

All plans for prompt and definite procedure have been made and the first presentation of the plan will be made by Mr. H. R. Wilson before the annual convention of the Western Confectioners' Association which will be held in Seattle, Wash., on January 19 and 20, 1926.

Schedules for other meetings are being prepared and it is hoped that the entire field will be covered before the next annual convention of the association and that at that convention the executive committee can report to the members that it has carried out the instructions of the Boston convention, has selected a practical cooperative advertising plan for the industry and has secured sufficient pledges to justify the plan being put into effect for a period of three years.



Lubrication of Machines and Oil Contamination

by B. L. Lurie

Designing Engineer, Lurie & Lurie, Mechanical Engineers.

Written Exclusively for The Manufacturing Confectioner

IN DAYS gone by "hand made" and "home made" were big words in the advertising of manufacturers of food products. Today the germ-wise public prefers to know that goods are "not touched by human hands." The human hand, however, is only one of the several sources of food contamination. Lubricating oil is another source of trouble. A loose drop or two on a revolving shaft may be dropped or thrown quite as far as the most prodigious sneeze and as effectively in point of contaminating effect.

That lubricating oil, both animal and mineral, is a medium of the best kind for the propagation of germs has been proven beyond doubt by a number of scientific investigators on occurrence of skin diseases among workers in the metal trades. Asepsis, by the addition of caustic substances, is impractical, since a good lubricant must maintain the high polish attained in a proper bearing against etching and corrosion, and the acids and alkalis would destroy this important quality.

Assuming that machine oil was germ free, it is self-evident, that even then its occurrence in edibles, producing discoloration and bad flavor, would be a source of complaint and loss. Castor oil, for example, is now used largely as a machine lubricant and you may be sure that the consumer will find it a poor flavoring material.

Using only ordinary care, oil troubles can be guarded against in machinery produced by competent manufacturers and designers of confectioners' equipment, since such machines contain the facilities for proper lubrication. A good understanding on the part of the manager of the plant of what this care should be, and the principles underlying, will furthermore cut down cost on machine repairs, power bills and lubricants.

What Lubrication Consists of

Lubrication consists of having a film of oil between the two metals in its bearing so that the metals do not touch. The film of oil is generally no thicker than the wall of a soap bubble. Despite its minute thickness it will hold from 50 lbs. per square inch for thin oils to over 200 lbs. per square inch for heavy oils of warm grease at ordinary shaft speeds. In shaft bearings the rotating shaft draws a film of oil around itself from the oil, grease groove, or oil hole. The faster the shaft rotates the thicker the oil film the shaft tends to cover itself with. Sliding bearings are not so fortunately inclined as they do not tend to attract the oil but rather to break it.

Apply Oil Properly—Secret of Lubrication

From the foregoing it is evident, that a barrel of oil can do no more good than a drop properly applied, except where the oil acts as both lubricant and cooling agent, and that proper lubrication therefore consists in supplying small quantities of oil continuously. When the right grease is used it changes to a heavy oil in the bearing due to pressure and frictional heat so that these principles laid for oil apply to grease as well.

The chief cause of oil taints in manufactured products, based on the writer's experience, seems to be due to lack of regularity in oiling, and the idea that flooding the bearing when thought happens to be directed to it, will somehow remedy its previous neglect. Other sources of trouble are indicated in the following list of instructions which any oiler or handy man to whom the lubrication of machines can be entrusted will understand. Following up of these details by plant managers can end in nothing but profit and satisfaction.

Suggested Instructions for Lubrication

1. *Grease.* Use grease where bearings are exposed to heat.

Use grease where bearings are under great pressure as in thrust collars in worm gearing.

2. *Grease Cups, Oil Cups, Oil Holes, Oil Cans.* Do not put oil in grease cups.

In oil cups see that waste or a similar material is placed in cup in such a way as to keep oil *dripping slowly.*

See that both grease and oil cups are kept filled and covers tightly closed.

Keep oil holes free from dust and see that small qualities of oil are applied at frequent intervals.

For small oil holes have on hand and use a small oiling can with a fine spout.

(*Continued on page* 36)

"During the hottest days this Sum functioned perfectly. The chat with a gl g

(ABOVE) A link in the continuous manufacturing operation of "Oh Henry!" The centers, after being mechanically formed, are cooled by use of four Bentz "COLDBEDS" (75 feet long x 32 inches wide), before passing to the chocolate coating machines on the floor below.

The success of the OLD-BED" in the mo ufacture of chocolate nfections is the res ntific research and ac cula-tion in connec the removal of heat goods by refrigerated con-ditioned air.

May we give you of manufacturing c in your locality ng Bentz Coldbeds?

(BELOW) The final s manufacture of "Oh Henry!" ground, four Bentz "COLDBE ong x 32 inches wide) connec end of coating machines. Thes" set the chocolate and deli operly cooled to the packing fore-ground.

Professional Engineering Counsel and Service

THE Bentz executives and representatives are, first of all, accredited refrigerating and air conditioning engineers; we have specialized on production problems of industry where the control of temperature and humidity is an important factor.

Consequently, we made some years ago, an exhaustive study of the cooling and packing of chocolate coated confectionery. As a result we developed the "COLDBED" which has proved to be the most practical and economical and satisfactory system on the market for all-the-year-'round production of chocolate work. Over 400 Bentz "COLDBEDS" are working successfully in the candy industry, which is a tribute to our equipment and also our engineering ability as aplied to candy plant layouts. Many of the most successful candy manufacturers have gladly accepted our survey of their manufacturing conditions, together with floor plans and suggestions regarding refrigerating requirements. This service is without charge or obligation.

May we send you our Bulletin C. B. Join

BENTZ ENGINEERING CORPORA

NEW YORK: 122 Greenwich St.

...Suner they (8 Bentz Coldbeds) have ...chate has come out dry and hard ...n a gl gloss"--Oh Henry!

...cess of the OLD- ...n the mo...ufac- ...chocolate ...nfec- ...s the res...ntific ...n and ac...cula- ...connec... the ...of heat goods ...gerated ... con- ...l air.

...ve give you ... of ...facturing c...in ...locality ...ing ...Coldbeds?

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...C. B. ...ing the Bentz "COLDBED" in detail?

WILLIAMSON CANDY COMPANY

Telephone-Spaulding 9100

4701 ARMITAGE AVENUE

CHICAGO

December 8, 1925.

Bentz Engineering Corp.,
661 Frelinghuysen Ave.,
Newark, New Jersey.

Attention:
Mr. Harry Bentz

Gentlemen:

I am very pleased to learn that you like the photographs of your equipment in our plant. If you like them as well as we like your equipment, you must be very well satisfied.

I haven't had an opportunity before this to compliment you upon the efficiency of your installation of cold-beds. During the hottest days this summer they have functioned perfectly. The chocolate has come out dry and hard with a good gloss and it has not been difficult to regulate temperatures in the cold-beds to accommodate the outside heat and humidity.

When we first purchased your equipment for our Brooklyn plant some years ago, we were a trifle afraid that the water or brine in the lower part of the bed might either corrode the metal and leak, or possibly become stopped at the outlet and bulge the metal or burst out. This has never occurred, and to the best of my knowledge there has never been a slight leak, so we have even forgotten to anticipate such occurrences.

If at any time we can assist you by showing this equipment in operation, please call on us.

Sincerely yours,

George H. Williamson

WILLIAMSON CANDY COMPANY

GHW-EP

Oh Henry!

Over 400 "COLDBEDS" in use in the Confectionery and biscuit industries of United States.

...ORON—661 Frelinghuysen Ave., NEWARK, N. J.

CHICAGO: 123 West Madison St.

Lubrication of Machines

(*Continued from page* 33.)

3. *Shafting and Bearings.*

Worn bearings will allow oil to run out where it should not be. A bearing permitting the insertion of three thicknesses of newspaper will not hold oil. Have worn bearings renewed as soon as possible.

In *vertical* shafts see that grooved collars or the collars with felt washers at bottom side of bearings are cleaned and adjusted to catch and retain the oil which gets through the bearing.

For *horizontal* shafts, bearings opening into mixers and the like generally having packing washers or stuffing boxes to keep oil from coming into food material. These packing devices should be inspected at regular and frequent intervals; they should be adjusted and not neglected until damage has been done the goods manufactured.

Overhead *line shafts* and hangers, and the machinery producing stuffs, should be so placed with respect to one another that oil and dust from the shafting and hangers will not fall into the food products.

4. *Gears.* Gears are generally slushed with grease and should therefore be completely housed. A guard made to prevent accident only is not sufficient.

5. *Sprockets and Chains.* A chain is best lubricated by removing it from the machine and immersing it in molten grease or oil for several hours. The outside of the chain, whether it be a roller or simple block chain, should be wiped clean and free from grease. Greasing outside of chain does practically nothing to reduce the friction of the chain against sprocket and is only justifiable where chain travels on rails. Superfluous grease will accumulate dust and bring it to the sprockets where it will act as an abrasive, finer than the finest emery flour, and cause excessive wear. The lubricating points of a chain are the little pins or bushings that pass through the roller or block. Chains are big offenders in the way of throwing off particles of dust laden oil and should be well guarded in this respect.

In General. Keeping machine bearings properly oiled as above indicated will prolong the life of the machine, prevent breakdowns, save from five to twenty-five cents on every dollar spent for power and keep your products free from deteriorating and noxious oil taints.

"Pivot Man" the Head of a Business

(*Continued from page* 25)

no exception to the rule. Every factory suffers, to greater or less extent, from the fact that its department heads have not been sufficiently schooled in human nature to be able to understand the motives, likes and dislikes, hopes and ambitions, actions and reactions of workers, and, understanding them, know how to shape and guide them to the urm's advantage. The fact that a foreman is an expert candy-maker is no assurance that he is a capable manager of men or women.

Executives will do well to bear this fact in mind when examining cost sheets. May it be that material is going to waste in a certain department—and, if it is, could the foreman cut down the leaks if he only knew how to *instill the habit of carefulness and thrift* in his workers? How much friction is there, and how much is it slowing down operations? How thoroughly does the foreman sell his workers on quality? May not that excessive labor turnover figure be due to the fact that the foreman is tactless or dictatorial—hard to get along with? And how much avoidable expense is going into overhead? In other words, how much are faulty human contacts to blâme for wastes which have been attributed to other causes or charged to "profit and loss"?

Better human leadership—the development of Pivot Men who win the respect and loyalty of their workers, and direct human strengths and weaknesses along profitable lines—this is the greatest single need of business today. The old-time foreman, with his wasteful methods, must and is giving way to the new type—one who *leads* because he *knows how to lead.*

This new type of Pivot Man, who is being developed by concerns in all lines of business throughout the country—to their great profit—will be discussed in an article in an early issue.

(*Next article in this series "Every Pivot Man a Four Way Salesman."*)

Research on Explosive Fermentation of Chocolate Coated Creams

Full Text of the Report on This Original Research Work

by H. S. Paine

Chemist in Charge, Carbohydrate Laboratory, Bureau of Chemistry, Washington, D. C.

A VERY brief summary of this report was given by Mr. Herman Heide before the convention of the National Confectioners' Association in Boston last year; the full text of the report appeared only in the official copy of the proceedings of the convention which is available only to a limited number of those vitally interested in this subject. We are publishing this full report by special permission of the N. C. A., knowing that all production executives and practical men in the confectionery industry will want the full details of this interesting original work. We are advised that the final report on the findings of the Bureau will probably be available for publication within another month or two.—EDITOR.

FERMENTATION of cream goods with bursting of the chocolate coating causes a large annual loss to the confectionery industry, including both retail and wholesale manufacturers. This is shown conclusively by the many letters which we have received from the industry. Our investigation is not quite complete at this date; the present report is a preliminary one and may be modified in a few details when the investigation is finished.

Examination of Samples of Exploded Chocolates

A large number of samples of burst or "exploded" chocolate coated creams submitted by manufacturers was examined for microorganisms. A large proportion of these samples was dried out when received. Methods of microscopic examinations were developed which revealed microorganisms in each case. Cultural examination revealed the presence of highly sugar-tolerant yeasts in each case studied. Samples which had burst comparatively recently were found also to contain microorganisms. In all samples of fermented cream goods examined, spore-forming yeasts or torula-like yeasts or a mixture of both types of yeast were present. Highly sugar-tolerant yeasts were present in every sample of fermented candy examined.

Cultures of these yeasts were prepared and fondant was inoculated with these cultures. Fondant was also inoculated with portions of fruit and fondant from recently fermented samples. In all of these cases active fermentation resulted with evolution of gas and bursting of the pieces when coated with chocolate.

These yeasts are tolerant of comparatively high sugar concentrations and are able to grow in sirups which are of such high density as to suppress the activity of most other organisms present. Consequently actively fermenting creams represent comparatively pure cultures of yeasts which cause fermentation.

Report on Inoculated Centers

Fermentation of cream centers by controlled inoculation with analysis of the creams before and after fermentation showed that the amount of sugar consumed as a result of fermentation was exceedingly small. The production of gas is the most significant and sensitive criterion of this fermentation, and the bursting of the chocolate coating is in turn a most sensitive criterion of gas production. Only a very small amount of gas is required to cause the chocolate coating to burst. As soon as this occurs sirup from the cream exudes, and in some cases the cream itself protrudes through the opening. The sirup and cream thus exposed to the air quickly dry out and as a result the fermentation soon ceases.

It is of incidental interest to note, however, that under special conditions it is possible to prolong the active fermentation for a considerable period. In one experiment two small identical Easter eggs were made; one was inoculated with fermented fondant and the other served as a control. Both pieces were coated with paraffin. Fermentation proceeded

rapidly in the inoculated piece and it finally swelled to several times its original size. Both pieces were recoated with equal amounts of paraffin at intervals, thus preventing bursting and escape of the gas produced. Drying out of the cream center was thereby prevented, thus making it possible for the fermentation to continue actively for several weeks.

Fruit—the Principal Source of Infection

The principal source of infection which has come to our attention is fruit. An examination of fruits such as cherries and pineapples packed in sirup for use in cordial centers showed these to contain yeasts. Crushed fruits used alone, or in conjunction with other flavors, are also sources of infection in case they are not properly processed or sterilized. Fermentation was also in many cases associated with the use of maple-nut flavor. A great majority of the fermented pieces which have come to our attention contained fruit or maple-nut flavor, although a few instances of fermented plain cream have been noted.

Keeping in mind that fondant or cream consists of a mixture of sirup and microscopic sugar crystals, there are two important factors which primarily determine whether fermentation will or will not occur, and these are: (1) Inoculation of the cream by fruit or other material containing quantities of living yeasts; (2) density of the sirup in the cream.

In order to reproduce fermentation of chocolate coated creams with known highly sugar-tolerant yeasts as agents, forty lots of chocolate coated creams including controls were made. These yeasts were secured from commercial samples of fermented creams. The pieces of candy into which active yeasts were introduced burst with cracking of the coating, leaking of sirup, and extrusion of the cream. The uninoculated controls and the pieces into which sterlized fruit was introduced remained sound. All pieces were held at 68° to 75° F. If fermentation, as evidenced by bursting, did not occur at 68° to 75° F. in the pieces into which yeasts were introduced, the candy was subjected to as high a temperature as 80° to 86° F. Remelting temperatures of 140°, 158° and 176° F. were used.

The temperatures used for remelting did not affect the yeasts since these were introduced in almost every case after casting. At the conclusion of the observations on each lot of cream, microscopic and cultural examinations checked exactly with the fermentation or the lack of fermentation which occurred. The sugar-tolerant yeasts introduced were recovered in living condition from the inoculated candy after many weeks. Microscopic examination of the cream by methods developed especially for this investigation also proved the presence of the yeasts introduced. The sugar-tolerant yeasts selected for the experiment were not at all small torula-like organisms, which fact facilitated the final examinations.

Fermentation occurs, of course, in the sirup portion of the cream, and it is well known that sirups of high density are in general much less subject to fermentation than sirups of low density. It was, therefore, of importance to determine the variation in density of sirup in creams of different batch compositions and to ascertain how their susceptibility to fermentation varies. The density of the sirup in the cream depends primarily upon the solubility of the ingredients of the batch, and this in turn depends upon the proportion of the ingredients, i. e., the batch composition.

The proportion of sirup to sugar crystals in the cream depends primarily upon the cooking temperature—the higher the cooking temperature the smaller the proportion of sirup. Even for the same batch composition the density of the sirup in cream made at higher cooking temperatures may, owing to supersaturation, be temporarily higher than that of cream made at lower cooking temperature, but after standing for a few days the sirup density should be practically the same for all batches of the same composition regardless of the cooking temperature. A higher remelt temperature also temporarily causes a higher sirup density in creams of the same batch composition.

Determining Variation in Density of Sirup in Different Batches

A systematic study was made for the purpose of determining the variation in density of sirup in cream of varying batch composition. In making this investigation it was necessary to separate the sirup from the cream. This can be done by centrifuging at high speed, but we found it more advantageous to use a specially designed press.

It was found that the total solids content of the sirup in cream may vary from a minimum of about 67 per cent for straight sugar cream to as high as approximately 83 per cent for cream containing a mixture of cane sugar, glucose and invert sugar in certain proportions. A large amount of data showing the per cent of total solids in sirup from cream of varying composition was obtained. Only a few instances will be given here.

The proportion of cane sugar to glucose or invert sugar added as original ingredients in the batch varied in our experiments from a minimum of 1½ parts of cane sugar to one of glucose or invert sugar to a maximum of 15 parts of cane sugar to one of glucose or invert sugar. In cream containing 15 parts of cane sugar to one part of invert sugar sirup the content of total solids in the sirup was approximately

70.5 per cent. The sirup in cream made from 8 parts of cane sugar to one of glucose as original ingredients contained approximately 73.5 per cent of total solids. When the proportion of cane sugar decreased to 5 parts of cane sugar to one part of glucose the total solids of the sirup increased to approximately 75.5 per cent. In fondant made from 4.1 parts of cane sugar to one part of glucose the sirup contained approximately 76.5 per cent of total solids and finally in fondant made from 1.9 parts of cane sugar to one part of glucose the total solids of the sirup reached 80.9 per cent.

The lowest per cent of total solids in sirup noted in the case of hand-rolled creams (excepting straight sugar cream) was 70.2 per cent, whereas the highest content of total solids in sirup in the case of low priced cast creams containing a high proportion of glucose was approximately 81 per cent or a variation of almost 11 per cent. This difference in density of the sirup in cream undoubtedly is of great importance in determining the tendency of the cream to undergo fermentation when infected.

To Determine Susceptibility of Creams to Fermentation

For the purpose of testing the influence of variation in density of the sirup in cream upon tendency to undergo fermentation, a second series of experiments was made in which creams from batches containing varying proportions of (1) sugar and invert sugar sirup; (2) sugar and glucose; (3) sugar, glucose and invert sugar sirup were inoculated with 5 per cent by weight of actively fermenting cream. In creams which were particularly susceptible of fermentation it was found that bursting occurred within two or three days.

It was, therefore, concluded that any lot of cream which could withstand this extreme infection would be immune from fermentation under practical factory conditions. It was found that cream with sirup containing more than 78 per cent of total solids did not ferment readily even under this extreme condition of infection. Cream with sirup containing 78 per cent of total solids corresponds to a batch composition of approximately three parts of cane sugar to one part of glucose.

On the other hand, creams with sirup of lower density corresponding to a batch composition of four parts of cane sugar to one part of glucose fermented readily when inoculated as above described. The foregoing batches all represent cast creams. Examination of samples of fermented, burst creams sent to us by various manufacturers showed that the sirup in the cream was invariably of comparatively low density.

Other experiments of a similar nature were made. Our experimental batches, both cast and rolled, contained egg albumen. In connection with fermentation of hand-rolled creams which are especially susceptible to fermentation and the fermentation of which has been sometimes ascribed to infection from the fingers of the girls who roll the creams, it is our conclusion that the low density of the sirup, due to the low proportion of glucose and invert sugar which is characteristic of such goods, is at least a very important factor.

The Means of Prevention of Fermentation

The means of prevention of fermentation lie along two lines, i. e.:

(1) *better processing and sterilizing of fruit and fruit-containing materials and general precautions to suppress sources of infection in the factory,* and

(2) *increase in density of the sirup in the cream.*

As a result of the use of imperfectly sterilized fruit the cream becomes strongly inoculated with yeast. Such fruit represents a constant hazard. The use of fruit processed and packed in low density sirup also tends to decrease the density of the sirup in the cream, owing to the fact that after the fruit is cast or dipped in cream the layer of sirup adjacent to the fruit is temporarily of lower density than the sirup in the cream, thus producing a zone in which growth of yeast may readily start.

We realize, however, that the use of fruit processed and packed in high density sirup may be undesirable for many purposes, and in fact we consider it quite unnecessary, provided the fruit is properly sterilized. Wash water used for cleaning utensils in connection with beaters, dipping tables, etc., may readily become an active source of infection owing to rapid growth of yeast on the sugar dissolved in such water. This water should be changed frequently.

High density of sirup in the cream will result as a matter of course in the case of batches containing a high proportion of glucose or invert sugar sirup. In the case of certain grades of hand-rolled creams in which it is not desired to increase the proportion of glucose an increased proportion of invert sugar sirup can be used and the cooking temperature correspondingly increased. The density of sirup in these and other goods can also be increased by use of invertase, with or without an increase in the proportion of invert sugar sirup added. If the initial sirup density is not too low and the yeast infection is not too pronounced we believe that the density can be increased by invertase action at a sufficiently rapid rate to control fermentation. The highest sirup density (approximately 83 per cent solids) which we have noted in cream was produced by the action of invertase in a batch made from cane sugar and glucose. It is believed to be possible in all cases

to increase the density of the sirup in cream to a high point without changing the grade of the goods.

Sterilizing at Remelt Temperatures

It should be mentioned also as a means of controlling fermentation that a remelt temperature of approximately 160° F. will, in the case of cast goods, destroy yeasts which are present in either an active condition or a dry or resting stage, thereby preventing fermentation. A thermometer should be used in order that the temperature may be determined accurately and the batch should be well mixed while remelting. This procedure is suitable for plain cream goods in which infection has occurred before remelting. It is not sufficient, however, for cream goods to which fruit has been added, either by dipping or casting, since the fruit is not in contact long enough with the cream at its highest temperature.

Remelting at a temperature of approximately 160° F. is probably sufficient in cases where crushed fruit, with or without other flavor, is added to the cream while remelting, provided the fruit is added as soon as remelting begins and the batch is thoroughly stirred so that the fruit quickly reaches the maximum temperature.

The approximate temperature of 160° F. above mentioned as a remelt temperature is based upon data relating to the thermal death point of yeasts in products other than fruits and confectionery. In completing this investigation we plan to carefully determine the minimum temperature required in the case of fruits and when remelting fondant.

In order to eliminate the possibility of fermentation in the case of cream goods in which fruit is introduced by casting or dipping, the fruit should be previously pasteurized by heating in the sirup or liquor in which it is received. We realize that this heating, if excessive, may have an adverse effect on the texture of the fruit. The time and temperature of heating should therefore be the minimum required for effective pasteurization. In completing the investigation we intend to determine carefully these minimum conditions.

The remaining work required to complete this investigation consists principally in determining the minimum time and temperature conditions required for remelting cream and for pasteurizing fruit as above discussed. This should be completed in the relatively near future.

We are confident that the various precautions indicated in this preliminary report will prevent "explosive" or bursting fermentation due to yeasts. Although examination of all the fermented samples which have come under our observation showed that yeasts alone are the cause of fermentation and bursting, it is possible that other microorganisms may at times cause trouble. We would be glad to receive samples from any manufacturers who experience trouble of this kind in order that we may make additional observations as to whether microorganisms other than yeasts are ever responsible. In conclusion, we would recommend that both of the general means of preventing fermentation mentioned in this report be followed simultaneously in cases where trouble of this kind has been encountered.

That Cost System

The Cost System is my salvation, I shall not fail;
It maketh me to lie down in peaceful slumber;
It leadeth me beside the still "leaks";
It restoreth my intellect;
It guideth me in the path of cost finding for my own name's sake.
Yea, though I walk through the battles of competition I will fear no danger, for it is with me;
Its accuracy and knowledge, they comfort me;
It prepareth a table before me in the presence of my family;
It annointeth my purse with profit and establisheth my credit; my purse runneth over.
Surely success and happiness shall follow me all the days of my life and I will dwell in the house of prosperity forever.

Fill Out Census Questionnaire Promptly and Carefully

THE Bureau of the Census is now engaged in collecting the data for the biennial census of manufactures, which will cover industrial operations during the calendar year of 1925. This census is required by an act of Congress approved March 3, 1919.

The schedules or questionnaires have already been mailed to all the manufacturers. Our industry is very much interested in the success of the census, which will depend not only on the accuracy of the statistics but on the promptness with which they are published. The director of the census has agreed to make a tabulation for each city within a few weeks after the receipt of the last schedule, *properly and accurately filled out*, and to publish the results of this tabulation in the form of a preliminary report.

At the census of 1923 it was necessary to send more than 100,000 letters to manufacturers requesting additional information or verification or correction of their reports. This, of course, delayed considerably the publication of the satistics. It is highly important, therefore, that you answer each question as accurately as possible and that you mail your report *promptly* to the Bureau of the Census.

In preparing your schedules, care should be taken to answer each inquiry that applies to your operations. Do not combine items that are called for separately. If you cannot give exact figures, careful estimates will be accepted by the Census Bureau. In answer to Inquiry 6, the value of production, *not sales*, is called for. The sales during the year may considerably exceed or may fall considerable below the production during the year. Where no exact records of production are kept, the value of the production for the year may be ascertained by adding to the value of goods sold, the increase in the

stocks of finished goods (or stocks in the process of manufacture) on hand at the end of the year as compared with the beginning of the year, or by deducting the decrease in such stocks from the value of goods sold. For example, if the sales during the year amounted to $50,000 and the value of stocks on hand increased from $10,000 at the beginning of the year to $15,000 at its close, the value of the production during the year would be $55,000; but if the stocks on hand decreased from $10,000 at the beginning to $5,000 at the end of the year, the value of production would be only $45,000.

We urge all manufacturers in the confectionery industry to cooperate with the Bureau of the Census in making the coming canvass in the shortest possible time and the most economical manner. These figures are published for the benefit of the manufacturing industry and the usefulness of census statistics is increased by making them available at an early date.

Sanitary Burlap for Bags

Manufacturers and users of sugar bags will be interested in the announcement that an odorless, sanitary burlap is now available for bag-making purposes, as a result of experiments prompted by W. E. Mullahey, a broker formerly connected with the sugar industry, and carried out by Dr. H. L. Henzerling, chemist and expert on vegetable fibres, now president of the Metropolitan Fibre Corporation of New York City. For several years Mr. Mullahey has been trying to secure a sanitary burlap to be used for bags to contain sugar and other food commodities. The problem of its production was finally presented to Dr. Henzerling, who after much experimental work finally perfected a process whereby the ordinary grade of burlap used in making sugar bags can be so treated as to remove the batching oils and jute odors without injuring the tensile strength of the material.—*Facts About Sugar, Oct.* 24, 1925.

Coming: Next Issue

"Production Profits" by A. C. Neilson

THERE is scarcely a candy manufacturing plant in the country that has not discovered some unique plan for saving money or increasing profits. Some have discovered tremendous profits in improved methods of handling materials. Others have found more economical methods of packaging their products; while still others have, through the installation of special and unusually efficient equipment, greatly reduced the actual cost of manufacture.

How rare it is to find a single plant that combines all known methods of increasing profits. The experience of one concern is too limited to make this possible. What a boon to the industry it would be if each plant could contribute to the industry as a whole its very best profit-making idea. We have arranged to secure for our readers some remarkable facts on the savings effected by certain progressive candy manufacturers. There is an organization known as the A. C. Nielsen Company of Chicago, who are engaged in securing the full facts on progressive and profitable methods, and we have arranged with them to secure for our readers much of the valuable information that is being gathered by their staff of highly trained investigators.

In our February issue Mr. A. C. Nielsen, President of the A. C. Nielsen Company, will describe a few of the profit-making plans that have made profits for others in our industry. He will tell how a large New England confectioner is saving $3,370.52 a year through the use of a more efficient conveying system, which repays its cost every 7½ months. He will tell how a large chocolate manufacturer in the east saves $6,000.00 a year due to the use of lift trucks—a saving which repays the cost of installation twice each year. Mr. Nielsen's article will also describe a coal handling system that has increased the profits of a Philadelphia confectioner $2,470.52 a year.

He will also describe briefly certain profitable methods used in other industries which can be applied with equal profit to the confectionery industry, such as savings due to the use of anti-friction bearings, savings due to recently developed power generating equipment, etc.

In these days of keen competition we are sure our readers will welcome these profit-making facts which the A. C. Nielsen Company have secured through the expenditure of thousands of dollars in personal investigations.

NEWS DIGEST

Midland Confectioners' Association hold their annual meeting this year at the Hotel Sherman, Chicago, February 17 and 18. Mr. E. B. Hutchins of Fond du Lac, Wis., will act as quiz master for the meetings. Mr. James H. Wilson is chairman of the entertainment committee and that promises a good time. Mr. George E. Williamson is chairman of the Nominating Committee.

National Products, Inc., Colorado Springs, Colo., succeeds the E. F. Allingham Manufacturing Company, manufacturers of "Allingham's Luscious Candies." Offices and factory will remain in Colorado Springs, although Kansas City capital has become interested in the company. The new company will specialize in five cent candy bars and high grade chocolates. H. G. McLaughlin of Kansas City has been appointed sales manager. The officers of the company are: President and general manager, E. F. Allingham; vice-president, E. R. Hawthorne; secretary-treasurer, P. J. Munson.

Nunnally Company, Atlanta, Georgia, have recently elected three new vice-presidents: Aleck S. Hopkins, vice-president in charge of production; Charles A. Rawson, vice-president in charge of sales and credits; Floyd C. Fenn, vice-president and secretary in charge of accounts and finances.

Cosner Candy Company, Denver, Colo., suffered a severe loss by fire just before Christmas. A large stock of candies was destroyed beside raw materials and machinery, totaling a loss of approximately $40,000.

Laura Secord Candy Shops, Toronto, was presented with Christmas bonus checks for the third successive year. Mr. O'Connor, president of the company, presented the checks personally.

The Sweets Company, New York City, have distributed a bonus to their employes equal to one week's salary.

Congress Candy Company, Houston, Texas, are enlarging their factory to take care of their increased business.

Schutter-Johnson Candy Company, Chicago, are going to erect a factory at the corner of Cicero and Augusta streets, Chicago. The first unit of the proposed plant will be a three-story brick and concrete building 75x300 feet.

Curtiss Candy Company's plant, Chicago, was slightly damaged by fire just before Christmas.

Nutrine Candy Company, Chicago, has obtained a ten-year lease on a six-story building at 413 West Erie, Chicago, and moved into their new plant this month.

Stein, Hall & Co., Inc., have moved their New York offices from 61 Broadway, to the new Murray Hill Building, 285 Madison avenue, where an entire floor will be occupied.

Joseph W. Boak, who has been representing Walker Candy Co., Owosso, Mich., as field manager, has been appointed sales manager of their company.

The Philadelphia Retail Association is broadcasting through radio station WCAU every Thursday evening at 8:45. One of the members of the publicity committee gives a fine minute talk on such subjects as food value of candy, the sentiment attached to candy, etc. Mr. Nordland recently gave a talk on the application of chemistry to the manufacture of candy.

New Incorporations

Potlatch Confectionery, Inc., Potlatch, Idaho; capital, $30,000. Incorporators: Joe M. Smith, J. E. Smith, E. W. Trueman.

Licht Son Candy Co., 1426 Morse avenue, Chicago, Ill.; capital, $6,000. Manufacture and deal in candies of all kinds. Incorporators: Eric C. Johnson, Frank M. Johnson, Wm. Lichtenberger, F. J. Lichtenberger.

Farley Candy, Inc., Chicago, Ill. Increased capital from $200,000 to $300,000.

Anderson Candy, Inc., 810 South Second street, Greenville, Ill. Mfr. confectionery. Capital, $7,000. Incorporators: Frances P. Anderson, Irene Kretzer, Frank Spirz.

Johnson Candy Corporation, Boston, Mass; capital, $50,000, and 100 par value shares. Incorporators: John O. E. Johnson, Astrid L. Johnson, Oscar B. Benson.

Pocket Packet Candy Co., Paterson, N. J. Incorporators: Herbert Godfrey, Frederick Wells, Ada Godfrey.

Schoer's Home-Made Sweets, Inc., 77 River street, Hoboken, N. J.; capital, $100,000.

Life Savers, Inc., Portchester, N. Y., former by consolidation of Minco, Inc. and Life Savers, Inc.; capital, $550,000 shares non par value. Incorporators: Edward J. Noble, Robert P. Noble, A. H. Diebold.

Honeymoon Manufacturing Co., New York City; capital, $20,000. Incorporators: E. F. Frankel, W. C. Funk, D. Fishman.

Golden Rule Candy Co., Albany, N. Y.; 100 shares, $100 each; 1,000 common, $10 each; active capital, $20,000. Incorporators: J. B. Golfoy, G. B. Mearns, J. H. Cunningham.

Metro Chocolate Co., Brooklyn, N. Y.; capital, $150,000, increased to $518,000.

Longwood Confectionery, Inc., Bronx, New York City; capital, $10,000. Mfr. candies. Incorporators: Daisy Rubin, Ruth Rubin, H. B. Friedman.

Sullivan County Candy Company, Inc., Liberty, Sullivan County, N. Y.; capital, $40,000. Incorporators: H. M. Beck, Charles H. Levy, Max Eisen.

Cracker State Nut Co., Buffalo, N. Y.; capital, $5,000. Incorporators: E. N. Warner, G. Kaiser, J. G. Lesswing.

Sunshine-Purity Ice Cream Corporation, Brooklyn, N. Y.; capital, 500 shares preferred at $100; 500 shares common stock non par value. Mfr. ice cream and confections. Incorporators: Harry Glaubman, Vincenzo Guardino, Diego Guardino.

M. DeDacany Confectionery Co., Inc., New York City; capital, $20,000. Incorporators: Abr. Ringel, Saml D. Shipper, Michael DeDeCanay.

Espo Confectionery, Inc., New York City; capital, $20,000. Incorporators: E. Sievers, M. Poppe, Jos. A. Michel, E. P. Price, Manuel Rosenblum.

Kingsway Confectionery Co., Inc., Brooklyn, N. Y.; capital, $10,000. Incorporators: Grace Linde, M. C. Berger, Marvin Leibowitz.

Unterecker's, Inc., Buffalo, N. Y.; capital, $500,000. Incorporators: John G. Unterecker, Frank R. H. Hawkins, Charles B. Moulthrop.

Capital Candy Co., Uniontown, Penn.; capital, $5,000. George Shedan.

Podell Candy Co., Seattle, Wash.; capital, $25,000. Incorporators: E. M. Podell, M. I. Langland, Robert F. Roberta.

Announcing the New Huyler's, Inc.

The new syndicate plans nation-wide expansion of Huyler's through more retail stores and greater production facilities.

Huyler's entire wholesale and retail business was purchased by a southern syndicate headed by Rudolf S. Hecht, president of the Hibernia Bank & Trust Company of New Orleans; Fred W. Evans, president and general manager of D. H. Holmes of New Orleans; Irvin Fuerst, now of New York, but formerly of New Orleans; Percy H. Johnstone, president of the Chemical National Bank of New York and H. B. Baruch of Henry Hentz & Co. of New York.

The continuance of Huyler's as a separate business organization with no other affiliations is assured by this purchase.

Huyler's is the oldest and probably the best known candy manufacturer and retail company in the country and operates factories in New York, Boston, Chicago and other points and a chain of 55 retail stores in various cities throughout the United States and Canada. Huyler's, which was established 50 years ago, has been one of the pioneers in developing the candy and soda business. Among the innovations which Huyler's have introduced have been the ice cream soda, the packing of candy in waxed paper to make it keep in hot weather and the introduction of French bonbons into this country.

Associated with the new Huyler's is A. D. Geoghegan, president of the Southern Cotton Oil Company of New Jersey and of the Wesson Oil and Snowdrift Company of Louisiana, which was taken over and refinanced to conspicuous success by another southern syndicate, also headed by Mr. Hecht.

Mr. Geoghegan has accepted a place on the board of directors as has Meyer Eiseman, a New Orleans realtor, who, together with Mr. H. Clifford Bangs of Washington, D. C., was instrumental in bringing together the principals in the recent negotiations. Mr. Hecht will be chairman of the board of directors of the new Huyler's, Inc., which will be a Louisiana corporation. Mr. Fuerst will be president in complete charge of operations and management, and Mr. Evans, who is head of one of the South's leading department stores, will be vice-president and will give a limited amount of time to the new organization.

The purchase price was not made public, but $7,500,000 has actually been subscribed to the syndicate and it will take over Huyler's with ample capital on hand after the payment on purchase price for the development of both the retail and wholesale ends of the business.

The syndicate, it is understood, was greatly oversubscribed and has the backing of practically unlimited capital.

Plans call for nationwide expansion with new stores in all leading and growing communities, but the distribution of Huyler products will not be confined to these stores. It will be widened and popularized in such ways as to realize on the reputation of Huyler's as the "national candy."

Executive offices and the main factories of Huyler's will remain in New York, although branch factories will be established in various sections of the country, the first new factory probably in New Orleans.

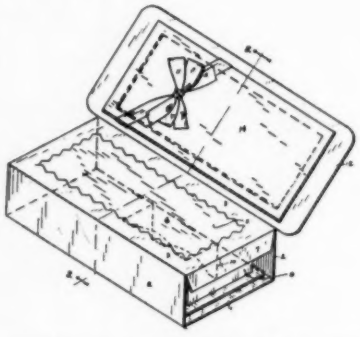
Mr. Irvin Fuerst, the new president, formerly head of Fuerst & Kraemer of New Orleans and more recently vice-president of one of the largest candy businesses in America, will devote his entire time exclusively to the development of Huyler's with headquarters in New York.

WHAT'S NEW?

New Patents

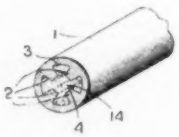
1,566,523. Candy-Box Holder. James L. Coffey, Milwaukee, Wis. Filed May 3, 1923. Serial No. 636,329. 3 Claims. (Cl. 211—24.)

1. A holder for a candy box and a wholly detachable cover having marginal flanges, said holder comprising an inclined body portion with open ends adapted to receive said box, and a frame extending upwardly and rearwardly from said body portion and provided with a rectangular opening corresponding substantially in form and area to the part of the cover bounded by flanges thereof, whereby said flanges are receivable through said opening to support said cover above and in a detached relation to said box.

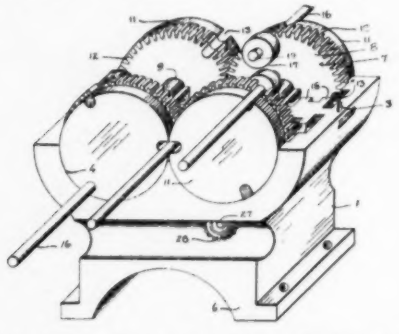


1,566,329. Filled Candy. William B. Laskey, Brooklyn, N. Y. Filed April 7, 1924. Serial No. 704,598. 1 Claim. (Cl. 99—16.)

A piece of candy in tubular form having flat-faced strength-giving ribs of considerable thickness projecting radially inwardly from the wall thereof, the interior of the candy being filled with suitable filling material.



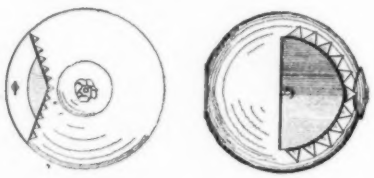
1,566,682. Candy-Pulling Machine. Charles G. W. Nitz, Milwaukee, Wis. Filed Oct. 25, 1923. Serial No. 670,669. 7 Claims. (Cl. 107—30.)



6. A device of the character described comprising a housing formed with a plurality of substantially horizontal bearing elements, rotatable members supported by said bearing elements, and a plurality of floating candy pulling members carried by the rotatable elements and extending axially from each end thereof, said floating members being transferable between said rotatable members to move in paths approximating the figure 8.

7. A candy pulling machine comprising a housing carrying drums which are substantially horizontally and revolubly mounted side by side, each of said drums formed with notched heads, the notches in adjacent heads at one end of the housing being in staggered relation to the notches in the heads at the other side of the housing, floating candy pulling members carried in the notches, means for transferring the floating members from one drum to the other at predetermined times, and means for rotating the drums simultaneously in opposite directions.

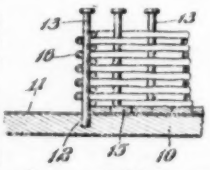
68,981. Confectionery-Vending Stand. George B. McInroy, Oakland, Calif. Filed July 6, 1925. Serial No. 14,002. Term of patent 7 years.



The ornamental design for a confectionery vending stand, substantially as shown.

1,566,146. Method of Forming Candy Baskets. James Lazarus, Baltimore, Md., assignor of one-half to Hyland P. Stewart, Baltimore, Md. Filed Aug. 1, 1925. Serial No. 47,619. 7 Claims. (Cl. 107—54.)

1. A method for forming candy baskets which includes forming a basket bottom of candy and placing this upon a base carrying a series of removable pins disposed in plan in accordance with the plan of the basket, and inter-weaving a strip of candy having an initial temperature of between 335° F. and 350° F. alternately on the outside and inside of the pins until a wall of the proper height has been completed, removing the pins and replacing with stiff candy rods, and then finishing the basket.



1,567,633. Confection-Cooling Apparatus. Alonzo Linton Bausman, Springfield, Mass., assignor to National Equipment Company, Springfield, Mass., a Corporation of Massachusetts. Filed May 17, 1923. Serial No. 639,629. 5 Claims. (Cl. 62—31.)

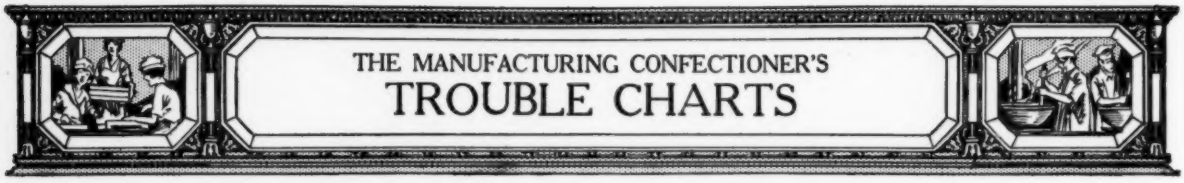
Successful Candy Superintendents I Have Known

(*Continued from page* 19.)

fully advised him to accept. Since joining his present firm he has had several promotions and marked increases in salary. He is still a young man, in good health, and has a real future before him, all because he had the courage and perseverance to seek and overcome difficulties, instead of accepting the first attractive job that came along.

An experience that I had with him recently will illustrate his character. A number of us had been attending a meeting at a plant in an adjoining city and came back to our hotel with the intention of going to the theater. As we finished dinner, this man stated that as he had a rather important business conference on the next morning he thought he would "turn in" early, because he had found that his mind worked more clearly and accurately when he had had a good night's sleep. Consequently, he went to his room as the rest of us started for the theater. It seemed to me like a typical example of the little things that probably were at the bottom of his success.

Another illustration of a man who came through is the story of a firm (making a miscellaneous line of goods) that had outgrown itself, starting in years ago practically as a candy kitchen. Its business has been built up on the principle of making a batch of one kind of goods one day and then manufacturing another kind the next day. Its business grew for various reasons, not only because it made good candy but because there were few other manufacturers of miscellaneous lines of penny-goods in the same vicinity. With the advent of the small fruit store and corner grocery, the business had grown rapidly until it finally reached the point where it was necessary to make a great many different kinds of goods on the same day. This necessitated the building of a larger factory and dividing the work into departments. Even then it was frequently necessary for each department to put through every day several different varieties. The old superintendent, who was a thoroughly competent candy-maker, could never quite adjust himself to this new condition. He never got over the habit of thinking in the terms of individual batches. It had been his practice, in the old days as a working superintendent, to help start each batch and hover around it until it was completed. Probably this was one reason why the firm had built up a reputation for quality. As the business grew it was difficult for him to supervise the making of a half-dozen batches. He simply could not adjust himself to new conditions, failing to realize that his job was to plan and supervise, holding his assistants responsible for the success of each batch. The situation finally became so bad that it was necessary to bring in a younger man who had had considerable experience in another plant and knew how to plan and organize the work. He has made good on the job and is now in full charge, largely because—in addition to other good qualities—he has the knack of laying out and planning systematically each day's work, so that the product will be turned out without interruption and delay. He has learned the knack of developing assistants, encouraging initiative, giving them a free hand and then keeping out of their way so that they can go to it. More important still, he has also learned how to control men by giving them full authority and then holding them absolutely responsible for results, accepting no excuses or alibis. Either they make good or drop out.



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VIII. Hard Goods

(1) Colors Fade, Spot and Change Their Shade.

- (a) Batch too hot when colored.
- (b) Too much acid in batch.
- (c) Graining of the batch.
- (d) Over-doctored batches with acid "kills."
- (e) Using variety of colored scrap.
- (f) Using inferior colors.
- (g) Using colors that will not stand the flavoring acids.
- (h) Adulterated colors.
- (i) Colors not properly mixed.

Note.—Some colors differ greatly in solubility and more liquid has to be used for such colors. Undissolved grains will eventually appear in the finished goods.

Adulterated dry colors can often be detected by blowing a little dry color on a piece of wet white blotting paper; the various colors used will show up plainly in spots. (Buy colors only from most reputable concerns specializing in food colors.) Standard paste colors are more reliable for hard candies.

(2) Hard Candy Grains.

- (a) Boiled too quick.
- (b) Low "doctored" batches.
- (c) Sides of kettle not kept clear of sugar crystals.
- (d) Batch not stirred till dissolved.
- (e) Not sufficient water in boiling.
- (f) Too high vacuum.
- (g) Not sufficient glucose.
  (Vacuum cooking checks the action of glucose.)
- (h) Adding too much dry scrap to batch after cooking.

Remelting a piece of hard candy will give an indication whether the candies will sweat. If it grains rapidly while remelting, everything is O. K. If no grain appears, the candy will not "hold up" and will sweat within 24 hours.

(3) Peanut Brittle Goes Dry and Stale-Looking; Also Grains.

- (a) Stirring nuts too hard against the sides of the kettle (causing a grain that will sometimes take weeks to show up).
- (b) Using too much "cuttings" in cooked batch.
  Little hard fat also helps.

Note.—Production on different grades of peanut brittle can be obtained by using roasted nuts in place of raw ones, and adding them to the batch at 300 instead of 240. At 300 degrees the fat and salt is added to the batch. It is then poured into four small kettles containing the desired amount of nuts in each, mixed, and four slabs filled from the one boiling; thus a saving of time, stirring, and three extra fires.

(4) Filled Goods Stick to Cutters or Dies.

- (a) Cutters set too close.
- (b) Jacket too thin.
- (c) Centers too soft.
- (d) Batch too hot.
- (e) Pitted cutters or dies.
- (f) Machine timing wrong.
- (g) Low boiling.
- (h) Plastic dies not sealing ends, allowing centers to leak.

(5) Butterscotch Sweats.

- (a) Too much glucose.
- (b) Low boiling.
- (c) Too much salt.
- (d) Weak sugars.

Note.—Buffers of any kind are useless in butter scotch on account of the amount of salt present, so therefore all ingredients should be carefully balanced and the finished goods wrapped in heavy waxed paper while there is still a little warmth in the batch, this allows the goods to "take on" a little thin film of wax from the paper and form a seal. A little hard fat (100°) mixed with the butter helps some.

(6) Poor Gloss on Plastic and Filled Goods.

- (a) Pulled too much.
- (b) Spinning table too cold.
- (c) Insufficient air blast.
- (d) Plastic cutters too warm.
- (e) Table or batch spinner too warm.
- (f) Humidity too high.
- (g) Finished goods not chilled quickly enough.
- (h) Pulled too hot.
- (i) Not using gloves.

(7) Hard Candy Goods Go Sticky.

- (a) Weak sugars.
- (b) Too much glucose.
- (c) Over "doctored" batches.
- (d) Slow boiling (causes over inversion).
- (e) Too much acid in centers.
- (f) Too much scrap used in jacket boiling.
- (g) Using used crytal syrup (weak sugars).
- (h) Wrong vacuum.
- (i) Insufficient steam pressure.
- (j) Damp storage.
- (k) Damp cans.
- (l) Cracked glass jars or poorly sealed jars.

(8) Cells Collapse on "Honeycomb" Goods.

- (a) Too much fat.
- (b) Too much molasses.
- (c) Ends not well sealed.
- (d) Batch too warm when handling.
- (e) Slab too warm.
- (f) Too much salt.
- (g) Not pulled enough.
- (h) Method of cutting not right.

(9) Filled Goods Crack As They Pass Through Cutting Dyes.
- (a) Batch too cold.
- (b) Machine too cold.
- (c) Center too cold.
- (d) Sizing too large.
- (e) Batch spinner cold.

(10) Glacial Mints (Continental Line) Not As Clear As Ice.
- (a) Too much cream tartar.
- (b) Using glucose.
- (c) Not sufficient blue coloring.
- (d) Sides of pan not steamed continuously and not kept clean.
- (e) Slow boiling. (Quick boiling is important for these super-clear goods.)
- (f) Wrong methods of cutting. These goods must be stamped out, not cut.
- (g) Too much water in boiling.

(11) Chocolate Centers for Plastic Goods Set Too Hard (Age Too Quickly).

Using sweetened chocolate and "shortening" it with water is not a good practice for goods to have a reasonable shelf life. Corn oil gives the same effect, keeps the center soft like peanut butter and improves the eating qualities as a basis. Chocolate liquor 2 lbs., corn oil 8 ozs., 4X powdered sugar 3 lbs. Melt the liquor, add the corn oil, then the sugar.

(12) Cream Mints Failed to Grain.
- (a) Slow boiling.
- (b) Over "doctored" batch.
- (c) Not sufficient powdered sugar added to batch before pulling.

(13) Plastic or Filled Goods Not Separating After Passing Through Cutters.
- (a) Boiled too low.
- (b) Jacket too thin.
- (c) Handling batch too hot.
- (d) Goods not chilled.

(See also No. 4 "Filled Goods Stick to cutters.")

COMING:

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